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OSTEOPATHY

..... EXPLAINED

...By...

J. MARTIN LITTLEJOHN, Ph. D., LL. D.

F. S. Sc., and F. R. S. L. (London)

Diplomate in Osteopathy



WITH COMPLIMENTS OF

C. E. ACHORN, D. O.

S. A. ELLIS, D. O.

MRS. ADA A. ACHORN, D. O.

OSTEOPATHS

The Ilkley

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Corner Cumberland Street

Boston, Mass.

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THE SCIENCE OF OSTEOPATHY

Its Value in Preventing and in Curing Disease.

By J. MARTIN LITTLEJOHN, Ph.D., LL.D.,
F. S. Sc., and F. R. S. L. (London),
Diplomate in Osteopathy.

[The following address, delivered in London before the Royal Society, is reproduced, by kind permission of the author, from *The Journal of the Science of Osteopathy (Scientific)* of February, 1900. It is unabridged; but the present editor is responsible for the wording of the title and for the insertion of most of the sub-heads. — C. E. A.]

FOR the first time in Europe and in this metropolis of the world, I desire to present the claims of this new science. I appear as the apologist of the new science, because, having examined its claims, I find that they are based on scientific principles which are the common property of the medical profession. It is not unfitting that to this ancient scientific corporation the first exposition and defence of Osteopathy should be offered. Your charter rights as a Royal Society give you the privilege and honor of branding any scientific truth as genuine, and to you belongs the right of disseminating it among the common people. I am encouraged by the lines of Hamlet addressed to Horatio,

“There are more things in heaven and earth * * *

Than are dreamt of in your philosophy.”

It is something to have the privilege in these closing years of the nineteenth century to live and take part in scientific efforts and movements that promise to crown civilization with its highest glory. In the field of medicine, changes are taking place unheard of in bygone generations. In other fields of literature and science, artificiality is giving place to naturality. Accumulations that have been added to science are being unloaded, and we are being led back to the simpler and more sure methods of nature. An ancient scholar has this exalted praise of the healing art: “Man in nothing comes nearer to the Gods than in giving health to his fellow mortals.”

Science is ever progressive, every new decade opening up depths and heights in the scientific field, hitherto unthought of. No science and art has been subject to so many changes as that of medicine. We use "medicine" in the widest sense here. Dr. Malcolm Morris, F. R. C. S., in writing on the progress of medicine during the Queen's reign, defines medicine as including "the whole art of healing and the laws upon which this practice is based." The science of medicine is not limited to drugs or their prescription and use; in fact, the therapy of the modern University Medical College is rapidly discrediting drugs. The Encyclopædic Dictionary defines medicine as "a science and art directed first to the prevention of diseases, and secondly to their cure." Only a very small place in the educational programme is devoted to drugs. Anatomy, physiology, pathology, symptomatology, and diagnosis have found their guardians and promoters and defenders in these schools; and if we set aside pharmacology, there is still left a large field of medical education.

ANTI-DRUG TENDENCIES.

Gradually people are realizing that there are more scientific means of curing diseases than by the use of mysterious and uncertain drug potencies. Almost instinctively people in every land seem to be turning in the same direction, towards a system in which the main principle is the adjustment of the mechanism to itself and the harmonizing of its organic functions. Pain is found where a contracted muscle presses on a sensory nerve; loss of muscle function, or paralysis, if it presses on a motor nerve. The misplacement of a bone, ligament, or muscle, the obstruction of a blood vessel, calls for the mechanical skill of an operator to replace the misplacement or to remove the obstruction, that in freedom the system may play normally. Nerve inactivity, fluid congestion, or the collection of diseased or germ-laden fluids in the system calls for the mechanical liberation of the affected parts; and in this liberation lies the secret of health restoration and the removal of sickness and disease.

MECHANICAL THERAPEUTICS.

Scientific investigators all over the world are beginning to recognize that we must take account of the structure and functions of the body in applying our therapeutics on a basis of adaptability to conditions. Dr. Willock, M. R. C. S., in calling attention to new treatments for the chest, says these methods of dealing with these diseases "have thrust drugs from the unique position that they held. They have

emphasized the fact that something else other than pharmaceutical products has an important remedial action upon pathological conditions of the respiratory and circulatory systems. Of all the several systems upon whose uninterrupted functional activity the continuance of life depends, these two are those over which we have most mechanical control, and it is by mechanical means that we can obtain a considerable and important therapeutical effect in certain unhealthy states of the heart and lungs." In regard to the application of mechanical treatment, he adds that in this way "the strain upon the impoverished tissue is diminished and its vitality prolonged. In addition, the effect of continued movements upon elastic and muscular tissues, provided undue effort is avoided, is to develop them."

BASIS OF OSTEOPATHY.

Here we have the statement that mechanical movements give us an increased functional activity and an increased nutrition. If we add to this the facts that physiologically nerve stimulation may be promoted, blood and lymph circulation freed, and obstructions taken out of the way, by mechanical means, so as to free the nerve force, the blood, the lymph, and the peristaltic movements of the tissue, we have the fundamental basis of Osteopathy.

DEBT TO MEDICAL RESEARCH.

We owe a debt of untold gratitude to predecessors who have tilled the fields of anatomy and physiology, both normal and morbid, and made it possible for us to apply the principles of Osteopathy with precision and definiteness to the human system. The principle of Osteopathy is a time-honored one, *similia similibus curantur*, in the sense that the only rational and scientific method of curing disease is based upon nature. Nature has won victories in other fields. In the field of education, nature won a victory in discarding the old system of cramming and in making education the stimulation of mental development by the skilful communication of knowledge by nature's method. Nature can do the same in the field of medicine; by removing everything that is unnatural, it can permit recourse to the perfect medicine laboratory of life, out of which the soothing draughts of nature flow to diseased parts.

THEORY OF DRUG ACTION.

Allbut, in his system of the Practice of Medicine, makes this statement: "We give drugs for two purposes: (1) To restore health

directly by removing the sum of the conditions which constitute disease. Here we act empirically with no definite knowledge — often indeed with little idea of the action of our drugs. (2) To influence one or more of the several tissues and organs which are in an abnormal state, so as to restore them to or toward the normal. This purpose we effect by means of the influence which the chemical properties of the drugs exert on the structure and function of the several tissues and organs."

OSTEOPATHIC DIAGNOSIS.

Drug therapeutics is empirical, lacking in exactness and scientific accuracy. Recognizing that medicine is applicable in a wider field, we attempt to go to the scientific basis of therapeutics, seeking to find why an organ or tissue is in an abnormal condition, using symptoms and morbid conditions as means to the discovery of causes, or at least using them as secondary causes. By a careful physical examination of the condition of the nervous and vascular supply to the local parts, with the view of finding and removing any irritation or impingement in connection with these forces that supply the part, a basis is laid for correction of the condition by manipulation — this is Osteopathy.

THE MEDICAL PROFESSION — THERAPEUTICS.

The theory of medicine, or the healing art — for I take these as synonymous — is that from a physiological standpoint it is possible to employ scientific means to preserve and prolong life, and when life is attacked or threatened by disease, accident, or malpractice, then certain physiological principles may be brought into operation in connection with the body system, to cure or alleviate these conditions that threaten to destroy life or to interfere with and lessen health and happiness. In all ages, attempts have been made to apply measures to the human system with this end in view. Arising out of these attempts to preserve and prolong life and free it from disease, we have the medical profession, which from the most remote antiquity has established its right to deal with disease, recognized its moral and legal responsibility in dealing with human life and health, and has attempted to make life more pleasurable, and therefore more happy, to the living and even to the dying. Custom, together with the formulated laws of different nations, has given legal sanction to this profession that aims to prevent disease, to prolong life, and to increase the comfort of life.

No empirical standard has ever been laid down with unerring sanction, as the accredited standard of measures to be adopted to secure

these ends. From a remote past, magical measures and hypnotic influences in the hands of a priestly class of physicians played a most important part in this service; with the discovery of the medicinal properties of plants, minerals, and certain extracts of animal tissues and organs, these were employed as medicinal agents; blood-letting and blistering were resorted to in the attempt to counteract certain supposed influences at work in the body organism. Certain vibratory and massage movements were found to have a bearing on body metabolism and organic functioning, and these were adopted as remedial agents. It was found by Hilton and others that the principle of rest applied to the organism or its parts, otherwise in active operation or overworked, brought to this over-active organ or hyper-functional part of the organism a new and therapeutic principle, in permitting nature itself under the influence of dietetic recuperation to restore the harmony of all its parts, and therefore to restore health. Others have found that heat and cold when applied to the body have an important influence in modifying circulatory and nerve conditions, so that these thermal agents may be actively used in restoring toward the normal. Light has been found to have a marked therapeutic effect on the animal organism,—a light of low refrangibility affecting the chemical processes, and a light of high refrangibility producing mechanical changes in the organism, modifying growth and tissue tension in relation to the organic movements.

OSTEOPATHY'S APPEAL TO NATURE.

The latest attempt to apply the therapeutics of nature comes in connection with Osteopathy. It may be best described as a physiologico-medical attempt to restore harmony to nature, on the basis of the human organism as a perfect mechanism, without external medication. Men in other fields, especially since the time of Virchow, have been led by the study of biology and physiology to regard the cell as the vital unit, capable of nutrition and reproduction, and on these fundamental functional bases capable of cell renewal and of forming in connection with a mass of such living cells the organism as "a summation of living unities, every one of which manifests all the characteristics of life." Side by side with this we find that nerve force, representing the function of the master tissue of the body, contains within it the secret principle of trophic functional control exercised in every organism of living tissues, the minutest nerve tentacles, more especially in the sympathetic or involuntary nervous system, controlling the necessary vital processes essential to the life of the organism. In

almost every laboratory in our European universities, we find men delving deep into these physiological and biological processes, with the object of finding out, if possible, the secret of life in the cell and in the organism, and to account, if possible, for all of those vital processes that take place in the renewal of the cell and organism life.

PREPARATION FOR OSTEOPATHIC PRINCIPLES.

The old science of medicine represented by drugs began to fall long ago by the attacks of skepticism which always come before truth. In Molière's plays we find an inimitable picture of one who was by nature a semi-fool turned by art into a physician. His mind, as Goethe puts it, "was well broken in and laced up in Spanish boots." "After many strokes of the hammer on the iron," he got his diploma, his highest recommendation being that he followed blindly the opinions of his forefathers. To-day we live in the age of freedom. In 1566 the faculty of medicine in Paris started the movement, by a unanimous decree passing this resolution, "that antimony is deleterious and to be counted among the poisons. Nor can it be amended by any other preparation so as to be taken without injury." In 1615 the same faculty unanimously interdicted drug vendors, and called on all judges to deal severely with those who prescribe, administer, or exhibit for sale the said medicines. Both of these acts were ratified by the French parliament, and were in force for one hundred years.

FUNCTION OF OSTEOPATHY.

It was reserved, however, for Osteopathy to treat the blood not only as the means of life, the thread that welds the diverse tissues of the body into one under the guidance and control of master nerve tissue, but to regard the blood and the nerve force as the medicine of nature. It was only yesterday that we began to look on the body as a great living mechanism. In order that its vital force may be unobstructed, the different parts of the machine must be adjusted to every motion of bone, ligament, and muscle; pure air must penetrate every minute cell of an unimpeded lung and every minute recess of healthy tissue; pure blood must circulate in every organ and tissue; and a perfect nerve substance with an irrepressible organic force must animate every tissue and pass through every region of the body. To see that this is the condition of the body is the function of Osteopathy.

MEDICAL FORERUNNERS OF OSTEOPATHY.

Osteopathy claims that to administer inorganic drugs internally is harmful to the system. In this, it is supported by some of the most

eminent physicians who represent the tendency of anti-drug therapy. The illustrious Hilton, of world reputation, the author of "Rest and Pain," advocated the now celebrated rest cure. Among others we find Dr. Keith, in his "Plea for a Simpler Life" and "Fads of an Old Physician," vigorously defending the same principle, and in a few of his scattered references anticipating Osteopathic treatment, especially in connection with *angina pectoris*. The celebrated manual treatment of Ling has many features that are suggestive of Osteopathic therapeutics. Dr. Wm. Osler, throughout his splendid work on the "Practice of Medicine," discountenances the use of drugs as unavailing and insufficient therapeutically, reaching the climax when, in speaking of the causes of diseases, he specifies "that most injurious of all habits, drug-taking," as one of the almost constant causes of disease. Dr. T. Lauder Brunton, of St. Bartholomew's Hospital, London, makes this statement, in connection with headache, that is Osteopathic in principle, when he says that "there is in migraine a dilatation of the proximal parts of the carotid artery with a contraction of the peripheral part," and that "if I take off the strain from the vessels by pressing the carotid, the pain is at once relieved."

CONTINUITY OF SCIENTIFIC LABORS.

Osteopathy takes up the principles enunciated by such men as these, found scattered over the field of medicine, carrying to their logical conclusion the principles that underlie their work; namely, that mechanico-therapeutic measures, if systematically and physiologically applied, may form the basis of the prevention and cure of diseases. Medical science is now passing from infancy to manhood, gathering up the copious generalizations of past history so as to subject them to the inductive examination necessary to their testing. Osteopathically we are attempting to reduce an art to science. This represents the modern spirit of scientific research, in virtue of which we hope to raise, out of the dead dogmatisms of the past, the new science, in connection with clinical work in the hospital and scientific work in the laboratory.

Here we find the starting point of what we believe will certainly revolutionize the field of medicine. The field of Osteopathy is very wide, taking in the entire therapeutics of disease, both bodily and mental. It began by demonstrating its therapeutic value in the case of alleged incurable conditions. It has branched out in every direction, until to-day it covers the whole field of medicine.

Osteopathy was first formulated by Andrew Taylor Still, M.D., in 1874. His own account of it gives us the initial point of view from which he looked at it. He claimed "that a natural flow of blood is health ; that disease is the effect of local or general disturbance of the blood ; that to excite the nerves causes the muscles to contract and compress the venous flow of blood to the heart ; and that the bones could be used as levers to relieve pressure on nerves, veins, and arteries." He conceived the idea that the human system is a machine, perfectly framed by its maker, and, if kept in a condition of proper adjustment, it is capable of surviving for a long time. He found that manipulation could be made, almost at will, in connection with the skeletal structure, with the result that all the organs could be stimulated to perform their normal functions. Out of this beginning there has been developed a system of manipulative therapy, aiming at rectifying all the abnormal structural and functional disorders of the human system.

OSTEOPATHY'S RELATION TO MEDICAL HISTORY.

While Osteopathy repudiates drugs, it claims to be the heir of all that is scientific in the past history of medicine. Its principles have lain buried beneath the massive literature of all other systems of healing, and have been used at times in the combat against disease ; but the fundamental principles have never yet been fully systematized with a view to their application from a prophylactic and curative standpoint. While it is in the main dependent on scientific manipulations, it is not exclusively the science and art of manipulation. It takes in and uses all the therapeutic principles that have been tested from the standpoint of nature, including the mechanical correction of misplaced tissues, bones, etc., the use of proper hygienic and dietetic principles, and, in fact, any principle that is in line with the natural laws of the human body.

CAUSES OF DISEASES.

Osteopathy differs essentially from all other systems in its account of the etiology of diseases and in the curative principles utilized. From an etiological standpoint, diseases are found to be very often due to structural derangements in the anatomy of the body, whether these are found in the osseous, muscular, or neural systems. Here Osteopathy claims to have stepped ahead of the rest of the medical profession. Medicine has been very largely occupied in discussing and exploring

the field of drug action upon the tissues and organs, forgetful of the fact that the chemicals of life lie hidden in the laboratory of human nature. Osteopathy claims that in substituting the laboratory of human nature for the laboratory of the chemist and experimental physiologist, it is getting closer to human nature and applying more scientifically, anatomical, physiological, and chemical principles.

We are not trying to undermine the therapeutics of the older schools, but rather, from a humanitarian standpoint, to substitute what we consider a more rational system of healing. From this standpoint, if every tissue of the body anatomically and functionally is correct, health must of necessity result. Hence, from an Osteopathic standpoint, any displacement of any of the tissues of the body may result, and, if continued, must result, in an abnormal condition. This applies to muscle, bone, ligament, tendon, nerve tissue, etc.

IMPAIRMENTS OF THE MECHANISM.

How do these changes in the form of displacement arise? It is easy to understand how a strain, over-exertion, a fall, or any ordinary external or atmospheric change may so affect the tissues as to produce displacement, to cause contraction, strain, or dilatation of the structural form of the tissues, so as to interfere with the proper flow of the fluids and forces of the organism, thereby producing an abnormal distribution of these fluids and forces. These fluids and forces represent essentially, from a biological standpoint, the vital and vitalizing principles and forces of the organism. It is easy to understand how changes in air, whether moist or hot, draughts, excessive exposure to sun, rain, wind, etc., may modify the muscles and other tissues of the body. In this tissue modification, involving contracture, there is necessarily an interference with the superficial blood supply and tension of the superficial nerve fibers; if this contracture becomes excessive, there is a strain on the muscles in their attachments, traction brought to bear on the bones and tendons, with the result that spinal articulation, vertebral and rib connection, become abnormal. In this condition there is a decided interference with the muscular and nervous substance, so that nerve force and fluid supply become pathological. The same conditions are found to be produced by the mischances of daily life, a strain, an undue twist of the body, a slip, or fall, or perhaps the attempt to evade such a slip or fall—any of these exerts an influence on the tissues, tending to displace the tissue structures, and also interfering with the nerve force and fluid supply to the parts.

Often a vigorous nature and native strength of the body are able

to rectify these conditions ; but often nature is weak and cannot of itself restore to the normal. Here Osteopathy steps in to assist nature by so manipulating the body as to correct these wrong conditions.

THE OSTEOPATHIC POSITION AND PRINCIPLES.

Osteopathy does not ignore the fact that there are many indirect causes that may be classified under the head of predisposing causes, distinguished from the direct causes of disease or diseased conditions. Heredity, environment, especially from a sanitary and hygienic standpoint, bacilli of multiform variety, infected germs, come into play in producing disturbances of function and causing disorder in the tissues of the body locally or generally. Osteopathy claims that often behind these is to be found the real cause of the disease, these secondary conditions simply furnishing the means or medium for the action of a perverted function, and therefore involving a derangement of the tissue.

When these conditions are found, the question arises, how can they be removed? Wherever there is a structural change, a disordered function, or derangement of tissue, it would seem natural to suggest the correction of the lesion. The surgeon, when he finds a dislocated joint or a broken bone, uses his mechanical skill in setting the joint and the bone. If a rib is displaced, or a vertebra out of its normal position, if a muscle is contracted, involving impingement upon the blood and lymph circulation and on the action of nerve force, why not mechanically use the surgical science in setting right these abnormal conditions? Here lies the secret of Osteopathy — it is the medical-surgical, not the medical and surgical, system.

That these structural disorders affect the internal organs of the body cannot be doubted, from the fact that osteopathically the *first* fundamental principle of therapeutics is, when diagnosis has revealed such a structural lesion, to remove the lesion or correct the displacement, whether of bone, cartilage, ligament, or muscle. Following this, the *second* principle is, to attend to the general health of the patient by specific manipulation of the body tissues, so as to promote free circulation, along with attendance to correct hygienic and dietetic rules. When the disorder has been removed, then the blood has free circulation and the nerve force free channels for action.

This pressure upon the nerve fiber or blood vessel may occur at any point in the skeletal structure, and the effect may be either direct or reflex ; in the former case the effects may be expected near to the point of impingement ; in the latter case they will likely be found at a distant part of the body, or in distant organs affected reflexly. This

is one reason why the spine and the ribs represent in Osteopathy the most important parts of the skeleton, because lesions among the vertebræ or ribs affect very seriously those organic centers in the spinal cord, the medulla, and the brain, at the basis of life, and involve interference with the action of those trophic influences that pass from the spine to the sympathetic ganglia and nerves that supply functional activity to the organs of the thoracic and abdominal regions.

Osteopathy aims to correct rib or vertebral displacements, to correct tissue contracture or displacement, so that when the tissues and bones are restored to their normal position and function, nature may resume its normal activity. In the removing of these obstructions, irritations, and hindrances to free activity lies the great secret of Osteopathic success.

Osteopathy is based on accurate knowledge of the anatomical structure and physiological functions of the body organism. Nature has placed within the body certain vital forces, vitalized fluids, and vitalizing processes and activities, which in harmonious accord with one another maintain the equilibrium of the body mechanism; any disturbance of these forces, fluids, or processes, and any interference with their activity, circulation, or distribution, involve the absence of harmony and interference with the body order. Osteopathic manipulations aim to restore these to their normal condition, so that the body may regain its normal functional equilibrium and form. In this way Osteopathy claims that life is revitalized and strengthened by vital forces, vitalizing fluids and processes, disease being removed or overborne by getting rid of an abnormal structural alignment that produces disharmony in the body and prevents normal functional activity.

Technically Osteopathy represents that branch of the science of medicine, in diagnosis and therapeutics, which is built upon an exact and comprehensive knowledge of the structure of the human body; of its chemical basis and the chemical constitution of its fluids and secretions; of the physical and physiological principles that regulate the body activities, of movement, locomotion, nutrition, vasculature, respiration, muscle, nerve and glandular action; in the elaborate synthesis within the organism of those vital principles at the basis of organic life, so that any deviation from the normal in the form of misplacement, derangement, or incoördination may be easily discovered and scientifically restored by mechanical operation.

It starts with the assumption that the body is a perfect mechanism, consisting of many parts, essentially of two that we call body and mind, the active and harmonious operation of all the parts in the perfect

mechanism constituting health. This perfect mechanism represents the sum as well as the climax of all being, so that every lower organism or form of existence is subservient to and in the main contributory to the upbuilding and development of this masterpiece of nature and God. A healthy body consists of the proper play and correct relation of all the integral parts of the organism, including the correct articulation of the entire skeleton, the proper relations of the muscles, ligaments, cartilages, and tendons to one another and to their skeletal attachments, the exact anatomical structure and physiological action of the blood vessels and the nerves of the body organism, so that all of these, in interdependence upon one another and in correlation to the organism as a whole, form the basis of the vital force of the body.

We hold that there is a trophic influence originating in connection with the cerebro-spinal fluid secreted in the brain, emanating from the brain along the spinal canal and the pathways of all the cranial nerves to be distributed in every part of the organism peripherally, so that when the trophic influence reaches the different organs and tissues of the body it is capable of selecting appropriate nutriment from the blood, and in conjunction with vitalized nerve force applying it to the nutrition of the local parts. This cerebro-spinal fluid also exerts a lubricating and antiseptic influence upon the nerve tissue and the other body tissues in which it is distributed that renders those parts normally immune to disease, and when subject to disease is restorative to the normal.

In the blood-forming glands of the body we find the basis of a blood formation that is adapted to the body as a whole and to its local parts, so that the blood carries with it the nutrient matters and oxygen suitable to every organ and tissue of the body. When the proper nerve force is exerted, this suitable substance is selected, and by a secretory process is separated, from the blood, to be applied locally to the different tissues of the body. In these trophic, selective, and secretory processes lies the secret of healthy blood, well-nourished tissue, and active metabolism of the tissues, which forms the true basis of a healthy body.

When the muscles of the body are kept in proper tone, when the skeleton and its attachments are kept free from abnormalities, when the cerebro-spinal, cranial, and sympathetic nervous systems are kept in free trophic and nutritive operation, when the supply of blood and lymph throughout the body is preserved in normal equilibrium, then the body is healthy. Any obstruction, interference, or mal-alignment will produce an unhealthy condition of the organism, because of an

interruption of the physiological processes or an interference of some kind with the physiological supplies that are necessary to the nutriment of every local part.

The essential basis of any therapeutic effect upon the body organism, whether produced by drugs, as in the old school of medicine, or by mechanical, thermal, or electrical stimulation, as in the case of the new school of medicine, is that the effect must be produced through a nutritive channel or by nutritive processes. Disease, in other words, involves malnutrition. The two main physiological functions controlling the nutritive processes are: (1) The nervous supply, and (2) The vascular supply. Both of these must be made the channels of stimulating in order to produce effects upon the organism, otherwise an imperfect result is gained.

Here lies the special value of the newer method of mechanical stimulation over the older method of drug stimulation. Chemical stimulation draws forth energy without supplying a new stock of energy, if the chemical stimulation takes place on an inorganic basis, that is, by the use of drugs; if it takes place on an organic basis, then the chemical organic substances are food, and as such supply the material for the nutritive processes. Stimulation on a mechanical basis has not only a stimulating effect but also a replenishing effect, nerve stimulation and blood stimulation furnishing materials in nutrient matters and nerve force for new energy.

THE NUTRITIVE BASIS OF MANIPULATIVE OPERATION.

Any manipulative effect, to be physiological, must be nutritive in its basis. To accomplish this, there must be the balance of the nerve force, represented either by the cerebro-spinal system or the sympathetic system, and the blood. This may be illustrated in connection with the production of an effect upon the heart. In affecting the heart we can reach its activity through two channels in the two systems: (1) In the cerebro-spinal system through the pneumogastric, a direct reflex being established with the heart through the inhibitory function of the pneumogastric, and also through the depressor nerve, an indirect result being established through the vasomotor system in the peripheral parts of the body, in connection with the blood supply. In the former case we have an effect through the continuously acting vagus action, and in the latter case through the emergency function of the depressor nerve, modifying blood pressure so as to relieve the heart when in a condition of strain. (2) In the sympathetic system through the cervical sympathetic, a direct reflex being established

by way of the pneumogastric and also through the splanchnics, an indirect result being attained through the vasomotor effect on the peripheral blood supply.

NERVE FORCE AND BLOOD SUPPLY.

This is simply an illustration of what may be stated of every part of the body, that the nutrition, rhythm, and functional activity are carried on from two standpoints ; that of direct nerve force, and indirect nerve force through the blood supply, the meeting of these two under normal conditions producing trophicity, tonicity, and functional activity. Both nerve force and blood supply are therefore under the control of manipulative operations of a mechanical nature, and here is the basis of our treatment of diseases operatively. Tonicity, for example, depends upon rhythm, and rhythm depends upon the antagonism of opposing elements or factors in the tissue vitality, such as the cerebro-spinal and sympathetic systems, or the nervous system and the blood, or the two kinds of muscles as in cardiac tissue substance. The tonic condition of any tissue of the body depends upon these opposing elements meeting in the tissue substance and keeping up the struggle for existence in these tissues of the body. Mechanical therapeutics, therefore, is based upon these physical and physiological principles which are capable of stimulating the vibratory, molecular, electrical, and chemical changes that take place in connection with the two main elements of vitalized tissue, the nerve force and the materials of the blood distributed under nerve direction, in connection with the selecting power of the trophic system. The stimulation of these processes can be accomplished most physiologically, without any foreign inorganic substances, by mechanical manipulation.

OSTEOPATHIC CHEMISTRY.

The body is not only a perfect mechanism ; it is also the most wonderful chemical laboratory that exists anywhere in the universe. In this laboratory are generated acids, alkalies, and all the fluids necessary to wash away accumulations of waste or impurity. Every day and every moment of our lives, the most wonderful chemical results, analytical and synthetic, are taking place, and these form the basis of those normal changes that keep the body in a condition of order. When these substances thus formed are distributed by the channels of the blood and lymph, under the direction of the nerve force, to all parts of the body, we have the secret of life. The vital powers of the body are capable of dissolving all the constituent elements of the body, from the blood to bone ; and the functional action of the body and its parts

is capable of modifying nerve, muscle, ligament, and bone. If a quantity of blood is thrown out by means of rupture, the result is a tumorous condition, resulting in the temporary suspension of vital activity. Such deposits are capable of being removed by nature. There are such solvents within the body on an acid and alkaline basis capable of disintegrating the most solid formations of the body, osseous or fibrous. In the body chemical laboratory this continual process of compounding, reducing, and forming substances of all chemical varieties is going on, capable of dissolving the most solid substances so as to prepare the way for the upbuilding processes.

In this renovation process, the first essential condition is to rectify any misplacement of the osseous, muscular, or ligamentous parts of the body that may be interfering with the nerve, blood, and lymph activity, not only to give free space and action to the nerves and blood vessels in communicating the elements of life and activity, but also by a free supply of lymph to wash out the impurities, cleansing the congested parts, so as to prepare for the renovation process. If the lymph is thrown into a space where blood has been held in congestion, the blackness of the local part will soon disappear, and by absorption there will be a removal of the substances causing the congestion. Hence, in the manipulation of the bones, muscles, etc., the object is primarily to give free play to the circulating fluids, with the object of dissolving and removing waste matters, if such are present; secondarily, to furnish a free supply of those substances that are borne upon and in the fluids, especially of an albuminous nature, that are necessary for the renewal of depleted or degenerated parts.

In addition to this, the scientific manipulations are designed, even where no marked abnormal condition of bone, muscle, or ligament is noticeable, to throw in the chemical supplies of the body life where they are demanded, so that nature may be assisted in the renovation by being furnished with such substances as are necessary in these processes.

TWOFOLD AIM OF OSTEOPATHY.

The Osteopathic theory is essentially based on the idea [that this process is twofold, and that it takes place naturally without any foreign drug medication: (1) The stimulation of the production or compounding of the substances that are needed by the body or by its parts; and (2) The manipulation of the parts of the body in such a way that these substances thus prepared by nature may be brought to the parts demanding them most, so as to remove all hindrances to health, and to supply all that is necessary to normal vitality.

For example, when we find renal or bladder disorders there is usually found clinically some tenderness in the renal area around the spine. This leads to an exploration of this area to find out any abnormal variations involving disturbance or displacement in the renal nerves, or else something in the spinal articulation involving pressure or interference with the trophicity of the organs. It is universally recognized that the lesions in cases of ataxia are not caused by a primary sclerosis of the neuroglia, the degeneration beginning in the prolongations of the posterior nerve roots in the spinal cord. According to the commonly accepted theory, the degeneration is due to the cutting off of the nutritive action of the posterior ganglion by some pressure on the nerve fibers at the point of entrance into the spinal cord. Under normal conditions, these fibers are constricted at this point of entrance, and it is easy to see how an obstruction like a meningeal thickening and induration, involving vascularity and nutrition at this local point, would result in the degeneration of the intraspinal fibers. Manipulation in this case would be designed to remove the local pressure and restore the nutritive continuity of the nerve fibers in the spinal cord.

UNITY OF THE BODY.

What is true of one small part of the body may be true of the body as a whole, all the different parts of the body being united in the most sympathetic relations. Every organ and every part of the body seems to be at least sub-conscious that it forms a part of a mighty whole. If any part should fail, it is the law of animal life that all parts suffer together, because, from the great brain source of conscious and sub-conscious power to the minutest nerve filament in the most distant part of the body, there is an inseparable relation of structure, function, and vital activity, forming the mainspring of life. Man cannot be perfect in health if the minutest nerve fiber to an eyelid is subjected to irritation. The same law holds good of every part of the body. Hence, whenever and wherever these minutest variations from the normal are found, there is disease in its true and substantial etiology; and here is found a fertile source of malnutrition, irritation, and degeneration that produces so many of the symptoms of a pathological condition.

FUNDAMENTAL PRINCIPLES OF OSTEOPATHY.

On this basis, the Osteopathic diagnosis is reduced to the discovery or attempted discovery of the cause or causes of disease. Diagnostic conditions may be summarized under the heads: (1) Misplacements

of bone, cartilage, ligament, muscle, membrane, or organs of the body ; (2) Disturbances in the fluids of the organism, including the blood, the lymph, and other secretions of the body ; and (3) Disorders or derangements, by tension, impingement, thickening, induration, etc., of the nervous system, including its centers, ganglia, plexuses, and fibers. Following up this line of physiological thought, the Osteopathic therapeutics is simplified, and will consist in the correction or the removal of the cause or causes of disease.

Corresponding with the diagnostic points, we find : (1) Scientific manipulations that aim to correct displacements in the bony and other tissue structures of the body, in its membranes or organs ; (2) Scientific manipulations that are designed to rectify the disturbances in the circulation of the body fluids and to restore them to their normal condition, especially blood conditions and defects in the blood circulation and distribution ; and (3) Scientific manipulations that utilize the nervous system with its fibers, ganglia, and centers, with the view of correcting the nervous disorders, toning up the general system or its local parts, promoting trophic conditions of the nerves and muscles, and stimulating a normal correlation of the psychic with the physiological and vegetative functions of the human system.

IMPORTANCE OF SLIGHT ABNORMALITIES.

The entire body is for functional activity ; hence there is nothing waste or superfluous and no room in the body for any abnormal condition. Hence the slightest deviation from the normal structure involves some interference with organic action and may give rise to untold mischief in the neural or muscular systems. Theoretically, Osteopathy has for its ideal a body whose bone framework is perfectly fitted and delicately set, whose muscles are carefully attached in their origin and insertion, whose blood is freely circulated in every part of every organ and tissue, and whose nerve force is the assimilating and life-giving principle in the entire body. There is a physiological sympathy between all the different parts of the body, and this sympathy is based upon nerve force. The laws of neural energy furnish the principles on which this uninterrupted sympathy may be preserved, and at the same time they explain all possible deviations from the health standard. In harmony with these laws, order must be restored to the system.

SIGNIFICANCE OF THE BONES.

The basic principle is that if the body organism is in perfect health, every body tissue and structure performs its part without inter-

ruption, the body structure representing the framework upon which the other tissues of the body are built and to which they are attached. Hence the bone framework is used in establishing landmarks for physical examination and as a means of restoring misplaced parts of the body. The bones become the basis for operative manipulation, so that manipulation represents the medium of the therapeutic operation in removing pressure, in producing stimulation and inhibition in connection with the nerves and their centers.

DIET.

One of its fundamental principles is that for the body, whether in health or sickness, no extraneous medication is necessary, outside of that natural dieting suggested by experience as essential for the sustenance as well as the repair of existing tissues, and for the creation of new tissue in connection with the general disintegration and dissolution of the body bioplasm. Dietetics represents the essential nutritive basis of a healthy and vigorous system. Good food in sufficient quantity, not to excess, and sufficiently varied, together with muscular exercise and normal respiration, represent the true culinary and gymnastic theories.

ESSENTIALS OF OSTEOPATHY.

The essential principles of Osteopathy may be set down thus : (1) Health is natural ; disease and death between the time of birth and old age are unnatural. (2) All bodily disorders are the result of mechanical obstruction to free circulation of the vital fluids and forces, and to the continuity of nerve force. (3) The impediments in the way of free fluid circulation and uninterrupted nerve force are found in osseous displacements, contracted muscles, ruptured ligaments, constricted or dilated vessels, hypertrophied tissue substance, or congested conditions of the tissues. (4) These abnormal conditions represent not only the change in structure or function on the part of particular portions of the organism, but also produce physiological disorganization of the vital forces of the body, producing an irritable condition either of over-stimulation, under-stimulation, or inhibition, resulting in excessive activity, partial activity, or inactivity, of the vital forces and processes. (5) In the restoration to the normal, the main purpose in operative manipulation is to coördinate the vital forces, to restore harmony in the vital functions, and thus aid nature in the elimination and checking of diseased conditions. In diagnosis based upon accurate knowledge of the structure and functions and activities of the tissues and organs

of the body, the condition of disturbance is traced to its primary cause, through or by the aid of symptoms and secondary conditions ; in the organic regional areas of the spinal cord, in the regional plexuses and sympathetic ganglia, secondary organic centers are localized in dependence upon the great primary centers of vitality and vital force in the brain, the manipulation aiming at reaching those centers of organic activity, trophic action, and regional control that are affected by the disharmony of function, the modification of structure, and the disorganization of the vital forces, to restore them to normal activity.

OSTEOPATHIC PRACTICE.

Osteopathic manipulation has passed beyond the experimental stage. It is now a demonstrated system of healing. It gains results because it uses and aids nature. All nature is pregnant with force, and nature's force is the most remedial because it is natural. The powers of the body are all self-restorative to such an extent that what is necessary is, not massage or drug medication or any kind of artificial treatment, but simply the utilization of what lies hidden in the laboratory of life. In this way and on this basis, assimilation is possible without alienation, so that remedial measures can be adopted that are native to the organism, with the subtle force of vitality and without any of the harmful properties of foreign substances.

ORIGIN OF THE NAME.

The name *Osteopathy* was applied to the new science on account of the fact that the displacement of bones occupied the first place in the category of causes or lesions producing diseased conditions. Like every other name given to a new science, it does not cover all that the new science embraces, but simply indicates the germinal point from which the new science started, as a science of diagnosis and therapy as well as an art of diagnosis and therapy. The underlying factor is that of body order and physics developed in connection with animal mechanics.

TECHNIQUE OF OSTEOPATHY.

Orthopædic Surgery and Orthopraxy have emphasized the mechanical principle in the treatment of deformities, debilities, and deficiencies of the human body. Massage has also emphasized the mechanical method of general rubbing and kneading. Osteopathy attempts to specialize the mechanical principle in dealing with all kinds of curable diseases, acute as well as chronic, graduating pressure, tension, vibration, and all the mechanical forms of physical stimulation, in their

application to muscles, bones, blood vessels, nerves, and organs of the body so as to gain therapeutic effects. This is the technique of Osteopathy.

For example, spinal irregularities involving curvatures or separations of the vertebræ throw out of line the vertebral spinous processes and produce impingement upon the nerves as they emerge from the spinal cord. In removing these irregularities mechanically by manipulation, the nerve force is liberated from pressure, and thus the suffering part of the body supplied by these nerves is relieved by relieving the osseous irregularity. The anatomical order of the body is also dependent upon the osseous framework, so that in the adjustment of the framework the body tension producing body pain is relieved; and this relief is brought to the system by using the bones as mechanical appliances, to remove tension and to produce the stimulation necessary to the stimulation or inhibition of the nerve centers.

IRON AS A TONIC.

Osteopathy repudiates drugs as foreign to the organism. The attempt to furnish an inorganic something to an organic being is regarded, not only as unnecessary, but as actually harmful to the organism. This arises from the fact that nature has provided a well-stored laboratory within the organism itself, consisting of processes, forces, functions, structural and physiological relations, as well as organic chemical compounds which are sufficient to meet all probable causes of disease. For example, in chlorotic anæmia it is a well recognized fact that the disease is not produced by an under-supply of iron, but from physiological inability to utilize the amount of iron stored in the liver and thrown off in the form of waste matter. Osler says, "Iron is present in the fæces of chlorotic patients before they are placed upon any treatment, so that the disease does not result from any deficiency of available iron in the food." To remedy this condition, the administration of inorganic iron is not only superfluous but injurious, because it will increase the amount of waste thrown off through the excretory system and therefore increase the excretory function to an excessive degree. Bunge claims that sulphur prevents the assimilation of this organic iron found in the food, the sulphides produced by fermentation retarding the assimilation. The administration of inorganic iron is said to promote a combination of the sulphides with this iron so as to permit the normal organic iron to combine with the hæmoglobin substance. This is simply a theory, and it lacks demonstration. Clinical experience has demonstrated that the correct

way to remedy the condition in which the iron is not used by the system but thrown off as waste is to remedy the defective nutritive condition. This can be done, not by increasing the amount of inorganic iron, but by promoting those physiological processes that are necessary to blood formation in connection with the assimilation of iron in organic form to the newly formed or combined hæmoglobin of the red blood corpuscles, thereby preventing the iron that is accumulating in the system from being wasted.

FEVER. — GERM THEORY.

In the case of febrile conditions, in connection with the vasomotor system and the temperature nervous system of centers and nerves, it is possible to reduce the febrile temperature and keep it within bounds, use being made of the nerve force and the blood supply through vaso-motion. More particularly through the vasomotor system is it possible to keep up the circulation of fresh and nutritious blood so as to check the ravages of the micro-organic germs, to such an extent as to promote phagocytosis by stimulating the white blood-corpuscles to activity in the destruction of the micro-organisms, that are rendered lethargic by the febrile temperature and the free supply of fresh blood, or by the production of chemical compounds that destroy the germs. This renders unnecessary the injection of serum on the basis of modern serum-therapy, because, by the manipulation of the blood and lymph in connection with the nervous system in the individual affected, the leucocytes can be stimulated to such activity as to eat up the germs and thereby produce in the system a serum that will render the body immune from the action of these disease germs.

LUNG TROUBLES.

In pulmonary affections it may be demonstrated that tuberculosis is a disease at least associated with the nervous system, the normal trophic influences being cut off in some way from the pulmonary system, so that the pulmonary system becomes a prey to the devastating action of the germs of tuberculosis. Hence the contracted thoracic conditions so often associated with phthisis, or the vagus interference found in connection with the vertebral displacements, or pressure upon the vagus in the upper thoracic region. The lungs represent the seat of many forms of pulmonary diseases that have wrought havoc among humanity. The condition may be one of simple congestion, of bronchial inflammation, or of pneumonic infiltration of the pulmonary substance. All these inflammatory conditions are caused by an inter-

ference with the blood flow, dependent on contracted conditions of the muscles of the thorax, the displacement of ribs, or the induration of the spinal muscles in the thoracic region of the spine, producing excessive stimulation or inhibition of the pulmonary nerves. These mechanical causes interfere with normal respiratory actions, preventing the inspiration of a sufficient amount of pure oxygen and the expiration of the necessary amount of carbon dioxide, as well as cutting off the trophic influence from the pulmonary tissue. To remove these causes, manipulation of the thoracic and spinal muscles is resorted to in order to remove the contracture; the rib depression is rectified; inhibition is brought to bear upon the spinal nerves that branch out from the spinal cord along the upper half of the dorsal region, to regulate the vasomotor action and stimulate pneumogastric action in connection with lung trophicity.

HEADACHE; ASTHMA.

Headache almost invariably involves a pressure upon the cranial nerves, a displaced atlas or axis, or vertebral displacement of some kind in the upper cervical region of the cord, producing pressure. Asthmatic conditions are usually found in connection with contracted and confined thoracic conditions, interfering with the action and supply of the nervous system to the lungs, and thereby preventing the normal respiratory action which requires the action of muscles and nerves and the thoracic enlargements of the chest produced by the raising, expansion, and rotation of the ribs and the rib attachments, together with the diaphragm.

DRUGS *versus* OSTEOPATHY.

Drug therapeutics bases its *materia medica* on pathology, symptomatology, and pharmacology in their relation to chemistry, physics, and physiology. The application of pharmacology is essentially empirical and alien to the body system. Osteopathic therapeutics bases its *materia medica* upon the chemical, physical, and vital or physiological functional principles of the normal body organism, in comparison with the abnormal functional action of the same principles from a pathological standpoint; so that while health represents normal functional action, disease represents abnormal functional action of the organism or its cells. Hence, while drug therapy uses internally or externally inorganic remedies, Osteopathic therapy represents applied functional biology and physiology and applied anatomy, on the basis of applied mechanical physics and chemistry.

OSTEOPATHY AS A PREVENTATIVE.

Osteopathy claims a prophylactic as well as a curative value. If Osteopathy is correct physiologically, and everything depends on physiological demonstration, then the Osteopathic practitioner should be in the best sense a family physician. His place in society is to attend to the family so that in the nurture of children the skeletal structure and physiological function of the organs of the body may be corrected at every mischance and kept in a correct condition. A child may be born with a misplaced anatomical structure or perverted physiological functions. In childbirth these misplacements may be produced; and if a child is to survive the operation of birth or to live a happy life in the future, these must be attended to in childhood. These childhood conditions account for much of the unhappiness and misery of later years, and give rise to many of the diseases that end in death before adulthood is reached.

OSTEOPATHY NOT MIND CURE.

Osteopathy lays it down as a necessary principle that health is natural, disease and death unnatural between childhood and senility. To demonstrate this, the Osteopath asks a field and a fair and even chance to show that this contention is correct physiologically. He asks the privilege of applying, subject to the law, the principles of physiological medicine. He is not a Christian scientist and has nothing akin to the mind healer. He believes in mind as the dominant factor in life, mind representing the master element in connection with the body organism; but he does not believe that in mind healing can be found a panacea for all the ills that afflict humanity. The diseases that affect the body are no ghosts with phantom-like appearance. That they are too real to require a demonstration is evident from the fact that Osteopathic symptomatology is based entirely upon structural and functional mal-alignment. Even in the case of mental diseases we find that they are associated with the same or similar anatomical and physiological mal-adjustments, displacements, or hypertrophic conditions, so that even insanity is subject to correction when these abnormal conditions are removed.

RELATIONS OF MIND AND BODY.

Physiology explains and largely accounts for psychological conditions; for true psychology is founded on physiology. The mental states and activities are of value only as they are illustrations and manifestations of physiological relations and conditions. The psychic conditions of life are brought out in the study and diagnosis of mental

diseases and in many of the nervous diseases. The physiology of the brain, the spinal cord, and the entire nervous system is at the foundation of every true theory of life, whether we take it as physical life, in its preservation, prolongation, and its treatment under diseased conditions; or in regard to mental life, normal or abnormal, or even the higher moral and spiritual life. If physiology is taught in all its bearings, it gives us the functions of a differentiated human life consisting of a number of organs, all of which are independent and yet united together to form in unison and harmonious activity a single life. As we step into the higher field of psycho-physiology, we find that mind is the ascendant power, and that in a healthy physiological life nothing less than a healthy mind can secure that vigorous condition of body necessary to health and happiness.

MENTAL DISEASES.

While we treat what seem to be purely bodily diseases, we must remember that the field of mental diseases is also opened up, and that these mental conditions of unhealth must be removed before the cure of body disease is possible. It is probable that every active operation of the nervous system affects the whole human organism, so that there must be a constant activity on the part of the nerve cells, accompanied by continued impulses entering and leaving those cells. This forms the basis of the continuity of conscious experience. Thus to each man is given by birth, not only a body, but also a mind, the basis of mental character and development. When man starts out from his initial point, his development is determined largely by environing conditions and educative processes. Even the power of volition is increased by culture, so that the inhibitory influence depends largely on educative influences. These educative influences pass through the nervous system, especially in connection with the education of the central nervous system.

Mental development, therefore, for good or ill, for health or disease of mind, depends on those educative influences under the control of physiological nerve tissue. Here lies the basis of Osteopathic work in mental diseases. The same or at least analogous causes, that produce bodily diseases, may produce mental diseases by involving an interference with that neural mechanism that is the essential physiological basis of mind and mental activity.

MENTAL PHYSIOLOGY.

Consciousness is not the product of the changes that take place in the cells, because even a knowledge of all the internal changes

would not give us consciousness. Some have identified energy of some kind with the causation of consciousness. But energy is a physical attribute in virtue of which certain matter or matters possess the power of acting, this action depending on the active changes taking place in the constituent elements. If we consider the nervous system as consisting of a complexity of nervous mechanisms, each mechanism in its simple form constituting an activity in which there is consciousness, then the entire nervous system would represent a complex series of conscious states from the psychic standpoint. Consciousness must exist, therefore, not only in the case of the entire brain but in the case of all the cells that constitute the brain.

Here lies the basis of memory and recollection, the impulses passing to the nerve cells in the brain, where on account of their strength they make a vivid impression upon the cells, so that when the stimulation has passed away the impression continues subject to recall. By the constant repetition of these processes, the impressions become so closely associated with the cell body that they form an inherent part of the cell life; so that by heredity these are transmitted from generation to generation, forming the physiological basis of mental intuitions. These intuitions represent modifications of the brain under the influence of mental development in connection with environment, each brain representing its own stage of progress in evolution. Where we have a great number and variety of impressions, we find great variation in the cell changes and a corresponding variety in the mental phenomena. When these impressions are so fixed in the brain cells that stimuli from another part of the brain can call forth a response, we have a fully developed mental condition. Mental development implies the receptive condition of the nerve cells and also the active operation of these cells in the changes involved in molecular development. These are regulated somewhat by the capacity of selection, in the case of different impressions, by the concentration upon particular impressions to the exclusion of others, by the activity of the cells in connection with particular impressions and the power of associating these impressions. Each of these elements has a physiological basis in the central nervous system, the brain development and mental culture depending largely upon proper nutrition, proper exercise, and correct adjustment of all its parts on the basis of neural stability. Individuals differ from one another in the original structure and constitution of the nervous system, this forming the basis of different degrees of intelligence and psychic initiatives as we find these in different individuals.

While thought and mental action cannot be spoken of as secretions, as Cabanis claimed, thought is impossible and mental activity an absurdity apart from those nervous processes which have their basis in the chemical, physiological, and vital changes taking place in the nerve cells. Here lies the secret of Osteopathic treatment by manipulation in the case of mental diseases, the manipulation being directed to the establishment of stability in the trophic conditions, adjusting the normal relations of cell with cell, preserving the integrity and unity of the nervous system, and correcting any misplacements or mal-adjustments of bone, muscle, etc., that would interfere with neural irritability or conductivity, the blood circulation, and other nutritive conditions necessary to neural integrity and continuity. By removing those abnormal processes and conditions that affect the nervous system, the nervous system is set free as the medium for the manifestation of mental activity, and thus sanity may take the place of insanity.

THE MATERIAL SIDE OF OSTEOPATHY.

The principle of auto-suggestion is not the principle of Osteopathy, although it may undoubtedly be utilized in dealing with purely mental conditions. Scientific suggestive therapy is undoubtedly a part of Osteopathy as it is of every rational system. But Osteopathy recognizes body diseases as well as mental diseases, and it deals with these body diseases from a body or material standpoint. Osteopathic therapy is, therefore, material as well as psychic. Auto-suggestion has nothing to do with the therapy of body diseases, because Osteopathic treatment can be applied even where there is mental resistance. The *materia medica* is purely physiological and therefore material, without any relation to spiritualism or Christian science in any form. In my own laboratory I have demonstrated that in cardiac conditions of failure or over-activity it is not necessary to give a drug either to stimulate or to lessen the heart action; for by the use of the sphygmograph, either the radial or carotid, or the cardiograph along with the recording kymograph, we have shown that the moment the fingers are placed upon the pneumogastric nerves the action of the heart is accelerated, and the moment that manipulation is applied to the superior cervical region controlling the sympathetic ganglia and nerves in connection with the heart, the action of the heart is lessened. Tracings of some of these experiments have been preserved in the case of both the normal and pathological heart.

ACTION OF THE HEART.

The inhibitory effect of the vagus on the heart, according to Stefani, is to protect the heart against possible exhaustion due to dyspnœa, increase of arterial pressure, and increase of temperature. When the arterial pressure increases, the cardiac center is stimulated, both directly through the vagus and indirectly through the depressor nerve. By the stimulation of the cardiac center, the inhibitory action is increased, with the result that the increased blood pressure is reduced. In the dyspnœic condition, the blood depletes the muscles, with the result that the depleted blood stimulates the cardio-inhibitory center, reducing the heart beat, and this enables the heart to get along with a lessened amount of oxygen. By the increase of temperature, the cardio-inhibitory center is stimulated, inhibiting the cardiac innervation, thus regulating the heart so as to enable it to resist the increased temperature. In this way the inhibiting innervation of the heart forms one of the vital factors in the heart life, furnishing trophicity to the heart, increasing the cardiac diastole, and increasing the anabolic over the katabolic processes. This explains why manipulation in connection with the vagus nerve has such an important modifying influence over the heart.

BOWEL TROUBLES.

Diarrhœa and constipation have both been controlled and corrected by the manipulation of the nerves from the spinal cord regulating the secretory and peristaltic processes in the intestines. There seems to be an economy of nature in the capacity of the different nerves for stimulation; for example, the dilator fibers are more easily stimulated than the constrictor fibers in the vasomotor system, the constrictors being the constantly active and the dilators the emergency fibers, the former representing the tendency to normalization in connection with the blood supply. Diarrhœa is produced by some mechanical irritation or obstruction, as, for example, the contracted condition of the spinal muscles resulting in an irritable condition of the vasomotor splanchnics to the visceral organs. The result is that the mucous lining of the intestines becomes congested or inflammatory, associated with accelerated peristaltic action. The exciting cause from a physiological standpoint is the increased excitability of the vasomotor nerves passing out of the spinal cord along the lower dorsal region. To remove this condition, an inhibitory pressure is brought to bear upon the lower dorsal region along the spine, so as to modify and normalize the peristalsis of the intestines and to regulate the blood supply, thus establishing nutritive order.

The curative standpoint of Osteopathy is nature's means to health. Health is associated with the harmonious action of all the different parts of the system, when these parts are free from irritation or disturbance from any cause, so that all the fluids, forces, and substances essential to life are permitted to flow freely to every part of the body, uninterrupted by any stoppage, impingement, dislocation, or displacement of any kind. The great law of life is harmony. Disharmony involves disease and leads to death. To remove this disharmony, the Osteopath attempts to trace out and readjust the mechanical disorders that impede some of the normal functions, thereby enabling nature to return to her equilibrium and to give health to the patient. Most, if not all, diseases have a direct relation to some mechanical cause, and the only cure for such a primary lesion is the mechanical correction of it.

"GERMS" AND DISEASE.

When the condition is complicated, as in many diseases, by the presence of micro-organic germs, we accept the theory of Hueppe, in opposition to the Koch school, that specific diseases are not caused by specific germs. Disease represents a function, not of the germ, but of the animal that is diseased, the normal activity of the organic cells giving health, and the abnormal activity of the organic cells giving disease. According to this, disease is the result of abnormal functional activity, resulting from : (1) Certain external conditions, and (2) Internal body conditions including the presence of the bacteria. Among the internal conditions we include the abnormalities already referred to which result in a mal-nutritional condition of certain organs of the body, this mal-nutritional condition furnishing the field for the bacterial deposit, development, and feeding in the tissues.

When there is an obstruction to the free fluid circulation and the free nerve current, there is presented a culture field for these germs, which begin to multiply and also to throw off toxic substances. Osteopathic therapeutics attempts to relieve the mechanical obstruction so as to prevent the germs from enjoying a field of culture, and when cut off from this culture medium throws in a rich supply of fresh blood whose leucocytes become active in the destruction of the disease germs. Fresh blood, fresh lymph, and fresh cerebro-spinal fluid represent three antiseptics furnished by nature for the use of the operator in dealing with micro-organisms ; as well as forming a nutritive basis in restoring normal local nutrition.

All inflammatory conditions represent primarily congestive conditions dependent on obstruction either of the arterial or venous circulation. The removal of the congestion involves the removal of the mechanical cause of the obstruction to the circulation.

PROMINENCE OF DIAGNOSIS IN OSTEOPATHY.

From a diagnostic standpoint, Osteopathy aims to develop a new science of diagnosis, in addition to the older methods of diagnosis by palpation, auscultation, and percussion. This involves the idea of a refined and sensitive tactition. A complete knowledge of human anatomy, both normal and morbid, includes a knowledge of the system from the standpoint of educated touch, so that proper discrimination may be made between the normal and the abnormal. The fingers can certainly be delicately educated to such an extent that in the blind there may be almost the vicarious substitution of touch for vision. The basis of this highly refined tactile education is found in the physiological structure and specialized activity of the minute nerve fibers and neuro-muscular organs in the fingers. At the basis of all the senses lies the essential principle of sensibility, so that in the education of the senses this sensibility may be acutely specialized.

EDUCATION OF THE TOUCH.

From the standpoint of objective diagnosis, this educated tactile sensibility presents a new and most important diagnostic means. It represents the materializing principle of Osteopathic diagnosis, distinguished from the subjective diagnostic principle of symptomatology. Symptoms are always more or less exaggerated. A physical examination by far excels any subjective statement of the case, as facts become the scientific basis of a true diagnosis. Part of the course in Osteopathic education is the training in this method of diagnosis by purely physical examination, so that the practitioner may be able to trace out on the normal body the outline of all the organs, the vertebral relations, skeletal articulations, etc.

In the spinal cord there are localized subsidiary organic centers, centers of reflex action and subordinate centers, corresponding with the brain primary centers, so that in nervous disorders and diseases of a nervous origin or complication, the operator can reach those centers of vital activity in connection with the vital forces, by manipulation along the spine. The object is to manipulate the nerve center and the nerve fiber, as well as to correct any existing lesion, so that, by physiological stimulation or inhibition, neural harmony, neural trophicity, and neural continuity of impulse may be established.

By this tactile diagnosis it is easy to detect an enlarged spleen, a dilated stomach, an impacted colon, or a hypertrophied liver. Along the spine, the fingers can detect contractures and tender spots that indicate congested conditions around the cord and spinal areas, the delicate manipulation of which will remove congestion and restore functional activity to the parts supplied by these nerves. In gynecology, the educated finger is able to appreciate the most exact condition of the affected organs or parts, detecting enlargements, prolapsed conditions, lacerations, ulcerations, hypertrophied and tense or relaxed conditions of the sphincter muscles, sac-like dilatations accompanying catarrhal inflammation and the lack of tonicity along the walls of the excretory organs.

HOPE FOR THE FUTURE OF OSTEOPATHY.

We cannot but think of that old adage as we look back over the history of medicine, "Thinking is the least-exerted privilege of cultivated humanity." Man is wedded to the opinions that are born in his being. And yet it is a wise provision, as the progressive spirit marches on, that science demands, first, the proof of the new to claim upon belief; and secondly, the declaration to mankind of what has been scientifically demonstrated.

To be branded as novel does not imply that an idea is false. The blood circulated in the same way long centuries before Harvey explained the philosophy of its circulation. The human body has survived many changeful vicissitudes, involving disease, pestilence, and death. If to-day we find that the body is interwoven by a meshwork of nerves, by means of which all the vital forces of the body are governed; if to-day we find that everywhere in the tissue structures of this body there are two great pathways of fluid circulation, by means of which the blood and lymph are carried to the most remote recesses of the organism, laden with nutrient materials for the nutrition of the tissues and bearing away the waste produced by the nutritional processes — it is not mere speculation to assert, when we know the nerves that direct and control and the vessels that supply with nutriment certain parts of the body, and when we know their functions, that these functions can be controlled more certainly by manipulation of the nerves and vessels than by pouring into the stomach an uncertain quantity and potency of drugs. "Nature has certainly a wonderful power of putting things right in the end."

I hope that the medical profession will be quick to receive, slow to dispute, on the basis of contradiction to old established customs,

methods, and theories, the claims of this new child of science. No class of men has been so quick to appreciate the good, and yet no class of men has been so ready to dispute the presentation of a thought or principle tending to overturn or interfere with the theories or dogmas of the profession. This has been largely due to the fact that scholastic jealousy has forced a medical etiquette upon the profession, that regards with jealousy anything that appears as the product of a different school. But this old-time jealousy and traditional reverence for antiquity is fast dying away. In the growth of science, in the progress of intellectual advancement, in the researches of the laboratory, loyalty to old established customs ceases to be a virtue; and he who delves deep into the mysteries of science realizes that foregone conclusions are unavailing, that truth presents the only open pathway to discovery, and that loyalty to the right and the scientific, whether old or new, is the only principle of our modern times worth fighting for.

May it be so that, when Osteopathy is unfolded to the scientific world and its principles are scientifically evolved and systematized, it may be quickly grasped and its principles patiently, persistently, and clearly unfolded, so as to increase the aggregate of human health and happiness! Till then, we who have already perceived and been able to appreciate the value of these principles must continue our researches in the field of human anatomy and physiology, in the clinical and laboratory investigation and practical demonstration, in the hope that every remote recess of the organism may be laid bare in such a way that no one may fail to see how the touch and presence of the educated hand can profoundly affect the entire functional well-being of the body organism.

C. E. ACHORN, D. O., Pres.

S. A. ELLIS, D. O., Vice-Pres

MRS. ADA A. ACHORN, D. O., Sec. and Treas.

Boston Institute of Osteopathy

(INCORPORATED)

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